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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,017	07/24/2003	David Platts	S-99,956	9948

35068 7590 09/30/2004

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EXAMINER

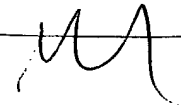
PRICE, CARL D

ART UNIT PAPER NUMBER

3749

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/626,017	Applicant(s) PLATTS ET AL. 	
	Examiner CARL D. PRICE	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07/24/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

*This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).*

### Claims 1-32: Rejected under 35 U.S.C. 103(a)

Claims 1-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB972302 (WOBIG) in view of WO 02/076884 (CARLOW et al).

In regard to the claims 1-32, recitations such as “for enhancing combustion”, “for introduction of a gas” and “for the introduction of air” are deemed to be recitations of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

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GB972302 (WOBIG) shows and discloses a method of increasing the efficiency of combustion processes comprising the steps of:

- apparatus for enhancing combustion comprising: producing an atmospheric pressure plasma created by dielectric barrier discharge,
  - spraying a fuel into the atmospheric pressure plasma,
  - wherein the atmospheric pressure plasma cracks the fuel gas.
- 
- GB972302 (WOBIG) includes an enclosure (2, 3) defining an opening for introduction of an atomized liquid fuel,
  - openings for the introduction of air (7a, 8a);
  - a nozzle (8b) in the opening for introduction of a fuel gas into the enclosure,
  - first and second electrodes located in the enclosure, the first and second electrodes being coated with dielectric material (i.e. – “insulated”; see page 2, lines 11-54) and being connected to an alternating current electrical power supply (see page 2, line 36),
  - wherein, with electrical power applied to the first and second electrodes and with the fuel sprayed into the enclosure,
  - an atmospheric pressure plasma created by a dielectric barrier (i.e. – insulated) discharge is produced in the enclosure that cracks the fuel.

GB972302 (WOBIG) discloses the invention substantially as set forth in the claims with possible exception to:

- dielectric/insulative material has a catalytic material which is at least one transition element, such as platinum, or an alloy of two or more transition elements and/or wherein the dielectric material has a catalytic material deposited onto it at predetermined non-contiguous areas (claims 8-11);

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- the fuel being selected from propane, natural gas, natural gas, Jet B fuel and JP-10 fuel (claims 17-22);
- the step of heating the fuel gas before the fuel gas is sprayed into the atmospheric pressure plasma (claim 23); and
- the electrical power supply provides radio frequency power having a frequency of 13.56 MHz., pulsed direct current power, or provides sub-radio frequency alternating current power (claims 12, 13, 14, 24-28);
- valve means for controlling the flow of fuel and air (claim 29);
- wherein the fuel is pre-cracked prior to being output to the combustor, and the air is output directly to the combustor (claim 30);
- wherein the air is excited prior to being output to the combustor, and the fuel is output directly to the combustor (claim 31).

WO 02/076884 (CARLOW et al) reaches, from the same plasma fuel treatment field of endeavor as GB972302 (WOBIG), forming :

- a dielectric/insulative material has a catalytic material (see page 9, lines 31-36 and pages 11, lines 5-20) which is at least one transition element, such as platinum, or an alloy of two or more transition elements (see page 7, line 8-21) and/or wherein the dielectric material has a catalytic material deposited onto it at predetermined non-contiguous areas (see page 5, lines 10-24);
- the fuel being selected from "gaseous, liquid or solid state" (see page 8, lines 4-7);
- the step of heating the fuel gas before the fuel gas is sprayed into the atmospheric pressure plasma (see page 3, line 14); and
- wherein the fuel is pre-cracked prior to being output to the combustor.

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In regard to claims 1-32, for the purpose of providing a suitable alternative electrode arrangement for generating the plasma field of GB972302 (WOBIG), it would have been obvious to a person having ordinary skill in the art to modify GB972302 (WOBIG) to include:

- dielectric/insulative material having a catalytic material which is at least one transition element, such as platinum, or an alloy of two or more transition elements and/or wherein the dielectric material has a catalytic material deposited onto it at predetermined non-contiguous areas ;
  - the fuel being selected from "gaseous, liquid or solid state" such as propane, natural gas, natural gas, Jet B fuel and JP-IO fuel;
  - the step of heating the fuel gas before the fuel gas is sprayed into the atmospheric pressure plasma; and
  - wherein the fuel is pre-cracked prior to being output to the combustor, and the air is output directly to the combustor, in view of the teaching of WO 02/076884 (CARLOW et al).
- 
- In regard to claims 12, 13, 14, 24-28, in particular, since the manner in which the electrical power is supplied to the electrodes would necessarily depend on numerous design parameters such as the type of fuel, desired flame characteristics, the overall size and shape of the burner, etc. to the electrical power supply provides radio frequency power having a frequency of 13.56 MHz., pulsed direct current power, or provides sub-radio frequency alternating current power can be viewed as nothing more than a mere matter of choice in design absent the showing of any new or unexpected results therefrom over the prior art of record. In regard to claim 29, Official Notice is taken that it is well known to provide combustion apparatus with valve for controlling the operation of fuel and oxidant supplies.

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**Conclusion**

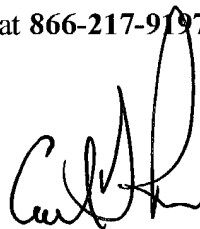
See the attached PTO FORM for prior art made of record that is not relied upon, which is considered pertinent to applicant's disclosure.

**USPTO CUSTOMER CONTACT INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Carl D. Price** whose telephone number is **(703) 308-1953**. The examiner can normally be reached on Monday through Friday, between the hours of **6:30 am** and **3:30 pm**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Ira Lazarus** can be reached on **(703) 308-1935**. The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (**PAIR**) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see **<http://pair-direct.uspto.gov>**. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).



Carl D. Price  
Primary Examiner  
Art Unit 3749